III. *An Account of an Experiment touching the different Denſities of Common Water, from the greateſt degree of Heat in our Climate, to the Freezing Point, obſerv'd by a Thermometer. By Mr.* Fr. Hauksbee, F. R. S.

I Caus'd a Quart of Water to be heated near ſcalding hot, and then put it into a convenient Glaſs with my Thermometer, the Spirit in which ſoon aroſe into the Ball a-top, where it remain'd till the Water cooling caus'd it to deſcend: by this time the Spirit in the Thermometer and the Water were become of an equal Temperature; and when it had deſcended to 130 Degrees above the Freezing Point, I began my Obſervations; which take as follows. I weighed a ſmall Bottle in't, and found the Bulk of Water equal to it in that State was 574 Grains. When the Spirit had deſcended to 80 Degrees above the Freezing Point, the Bulk of Water equal to the Bottle then weigh'd three quarters of a Grain more than before. At thirty Degrees above the Freezing Point, the quantity of Water equal to the Bulk of the Bottle was again increaſed about three quarters of a Grain. At the Freezing Point, it weigh'd ſtill ſomething more; in all about two Grains from 130 Degrees above the Freezing Point, to that very Point. Which to me ſeems conſiderable, and ought to be taken notice of by ſuch Gentlemen, who judge of a Mineral or any other Water by its weight, when they have not an opportunity of making the Experiment at the Fountain-head; for there I ſuppoſe the Water is at the ſame Degree of Temperature at all Seaſons.

Now

Now according to this Experiment, I find, that Water is condenſable by Cold one 28th part of the Whole, from the greateſt Degree of Heat in this Climate. Suppoſing then, that the Water in the Sea ſhould ſuffer the ſame Alterations by the change of the different Seaſons, (as I ſee no reaſon but very nearly it muſt) it would be eaſy to compute, that a Ship which ſhould draw two Fathoms, or 12 Feet Water, in ſuch Weather as is underſtood by the greateſt Degree of Heat, would draw about half an Inch leſs from the greater Denſity of the Fluid, when reduc'd to the premention'd Degree of Cold; and conſequently woul Sail better at that time.

But this is not all that occaſion'd the making this Experiment, for I did it in order to another. And ſince I find that Water is capable of Dilation and Contraction by Heat and Cold, I ſee no reaſon why the ſame may not be performed by force, notwithſtanding the many Attempts to determine it have as yet been fruitleſs. For ſince the conſtituent Parts of the Fluid, are capable of being remov'd at greater Diſtances one from the other by Heat, and become more cloſely united by Cold; ſo I conclude, that there muſt be ſome Body contained in't of an Elaſtick Quality, which (I think) muſt be ſubject to the ſame Laws of ſuch a Body; that is, be capable of Compreſſion by force, as well as to become more Denſe by Cold. But the Iſſue of this, I muſt leave to a more proper Seaſon.